Section 02317S

EXCAVATION AND BACKFILL FOR UTILITIES

The following supplements modify Section 02317 - Excavation and Backfill for Utilities Standard Specification. Where a portion of the Specification is modified or deleted by this Supplementary Specification, the unaltered portions of the Specification shall remain in effect.

1.02 MEASUREMENT AND PAYMENT: Delete paragraph A.3 and replace with the following:

A. Unit Prices.

3. No additional payment will be made for performing Critical Location exploratory excavation. Include cost in unit price for installed underground piping, sewer, conduit, or duct work.

1.03 DEFINITIONS: Delete paragraph H and replace with the following:

H. Suitable Material: Suitable soil materials are those meeting specification requirements. Materials mixed with lime, fly ash, or cement that can be compacted to required density and meeting requirements for suitable materials may be considered suitable materials, unless otherwise indicated.

Add the following:

V. Vacuum Excavation: An excavation technique performed by an experienced subcontractor in which water or air jets are used to slough off and vacuum away soil.

1.06 SUBMITTALS: Add the following paragraph and re-number existing B through F:

B. Submit proposed vacuum excavation method and qualifications of proposed subcontractor for approval by Project Manager.

2.02 MATERIAL CLASSIFICATIONS: Delete paragraph A and replace with the following and delete paragraph E entirely.

A. Embedment and Trench Zone Backfill Materials: Conform to classifications and product descriptions of Section 02320 - Utility Backfill Materials and Section 02321 - Cement Stabilized Sand.

3.01 STANDARD PRACTICE: Delete paragraph C.

3.02 PREPARATION: Add the following:

G. Limit concrete removal, pavement removal and dewatering to less than five pipe laying days in advance of pipe laying.

3.03 CRITICAL LOCATION INVESTIGATION: Delete last sentence of Paragraph 3.03 A and replace with the following:

Unless otherwise approved by Program Manager, at Critical Locations shown on Drawings, perform vacuum excavation to field verify horizontal and vertical locations of such lines within zone of 2 feet vertically and 4 feet horizontally of proposed work.

Delete Paragraph 3.03 A.1 and replace with the following:

1. Verify location of existing utilities minimum of 7 working days in advance of pipe laying activities based on daily pipe laying rate or prior to beginning installation of auger pit or tunnel shaft. Use extreme caution and care when uncovering utilities designated by Critical Locate..

3.05 EXCAVATION: Delete paragraph C and replace with the following.

C. Determine trench excavation widths using following schedule as related to pipe outside diameter (O.D.).

Nominal Pipe Size, Inches	Minimum Trench Width, Inches
Less than 18	O.D. + 18
18 to 30	O.D. + 24
Over 30	O.D. + 36

Excavate trench so that pipe is centered in trench. Do not obstruct sight distance for vehicles utilizing roadway or detours with stockpiled materials.

3.08 TRENCH FOUNDATION: Delete paragraph C and replace with the following:

C. Perform over excavation, when directed by Project Manager, in accordance with Paragraph 3.08B above.

3.10 TRENCH ZONE BACKFILL PLACEMENT AND COMPACTION: Delete paragraphs B, C, E, F and G and replace with the following:

B. For water lines, under pavement and to within one foot back of curb, use backfill materials described by trench limits.

1. For water lines 20 inches in diameter and smaller, use bank run sand or select backfill materials up to pavement base or subgrade.

2. For water lines 24 inches in diameter and larger, backfill with suitable on-site material (random backfill) up to 12 inches below pavement base or subgrade. Place minimum of 12 inches of select backfill below pavement base or subgrade.

C. For sewer pipes under pavement and to within one foot back of curb, use backfill materials described by trench limits.

1. For sewer pipes 36 inches in diameter and smaller use cement stabilized sand up to pavement base or subgrade.

2. For sewer pipes 42 inches in diameter and larger, backfill with suitable on-site material (random backfill) up to 12 inches below pavement base or subgrade. Place minimum of 12 inches of select backfill below pavement base or subgrade.

E. Where shown on the Drawings, remove unsuitable material from the site and backfill with suitable material.

F. Unless otherwise shown on Drawings. use one of the following trench zone backfills under pavement and to within one foot of edge of pavement. Place trench zone backfill in lifts and compact. Fully compact each lift before placement of next lift.

1. Class I. II, or III or combination thereof:

a. Place in maximum 12-inch thick loose layers.

b. Compact by vibratory equipment to minimum of 95 percent of maximum dry density determined according to ASTM D 698.

c. Moisture content within zero percent to +5 percent of optimum determined according to ASTM D 698, unless otherwise approved by Project Manager.

2. Cement-Stabilized Sand:

a. Maximum lift thickness determined by Contractor to achieve uniform placement and required compaction, but do not exceed 12 inches.

b. Compact by vibratory equipment to minimum of 95 percent of maximum dry density determined according to ASTM D 538.

c. Moisture content on dry side of optimum determined according to ASTM D 558 but sufficient for cement hydration.

3. Class IVA and IVB (Clay Soils):

   a. Place in maximum 8-inch thick loose lifts.

   b. Compact by vibratory Sheepfoot Roller to minimum of 95 percent of maximum dry density determined according to ASTM D 698.

   c. Moisture content within zero percent to +5 percent above optimum determined according to ASTM D 698, unless approved by Project Manager.

G. Unless otherwise shown on Drawings, for trench excavations not under pavement, random backfill of suitable material may he used in trench zone.

1. Class IVA and IVB (Clay Soils) may he used as trench zone backfill outside paved areas.

2. Place in maximum 12-inch thick loose lift.

3. Compaction by appropriate equipment to minimum of 90 percent of maximum dry density determined according to ASTM D 698.

4. Moisture content as necessary to achieve density.

3.11 MANHOLES, JUNCTION BOXES AND OTHER PIPELINE STRUCTURES: Delete paragraphs A, B and C; replace with the following:

Encapsulate manhole, junction box and other pipeline structures with cement stabilized sand; minimum of 1 foot below base, minimum 1 foot around walls, up to within 12 inches of pavement subgrade. Compact in accordance with Paragraph 3.10.F.2 of this Section.

END OF SUPPLEMENT

Approved by:

Hamlet Hovsepian, P.E.
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10/27/04
Date